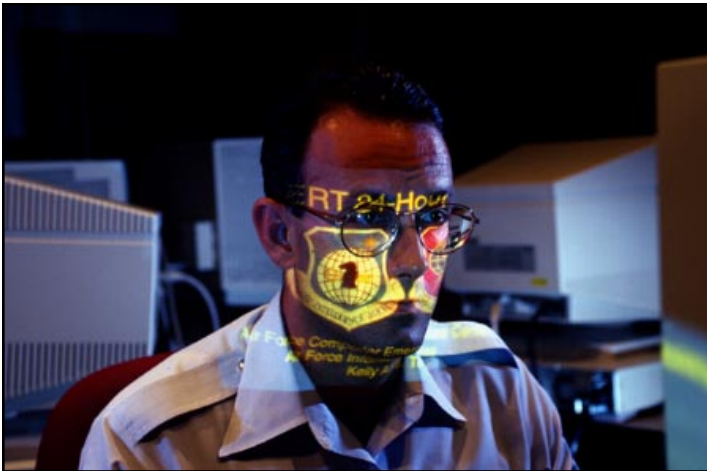


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Photo by Boyd Belcher



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## AIA ALMANAC

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# From The Commander

This year's AIA Almanac gives us all an opportunity to reflect on AIA's accomplishments, and we have certainly had an impressive year!

It's obvious from the number of awards we've garnered as an agency, as units, and as individuals that we have excelled in a variety of mission areas, but there are a few milestones I feel have been especially important to our overall growth and development.

Probably the most definitive moment for AIA, came during June's Corona Top meeting of the Air Force four star generals at Scott Air Force Base, Ill. We were specifically invited to brief Information Operations, and through the efforts of a lot of people, we filled our two-hour time slot with our philosophy, demonstrations of our capabilities, and our vision of and concerns for the future. The confidence we have in being number one in Information Operations was rewarded by the reaction we received — completely, totally positive! Our vision of Information Operations - information as a weapon, a target, and a place ... not just an enabler — is on the mark.

We've worked long and hard and taken steps to make the Chief of Staff's Global Engagement strategy, which includes Information Superiority, a working reality.

**First**, we've streamlined the headquarters to create billet surpluses to be reinvested where we need them most in support of our changing missions. This includes the merger of the Communications and Information Directorate with the Operations Directorate, based on the reality that information operations and connectivity are inseparable. We have also strengthened the Information Operations Center; now the headquarters' 24-hour-a-day nerve center, it provides situational awareness for Lackland's Force Protection Group, Information Operations reachback to customers, and is building an indications and warning set for Information Warfare.

**Second**, following the Chief's Innovation theme, we established the first of six Air Force Battlelabs. The Information Warfare Battlelab's charter is to think beyond our everyday missions, to originate ideas in doctrine, tactics, organization and training, as well as technology, and then apply them to what we are doing today and to help guide our planning for the future. Our Battlelab will explore innovative concepts for information protect, attack, gain, and exploit, and further prove their practical use for Air Force operations.

**Third**, we are redefining who we are and where we are through embedding and co-locating with our other operational counterparts. Our embedded AIA people at the Numbered Air Forces produce an information lifeline enhancing overall operations by providing an umbrella of information superiority. We'll be visible "at the fight" where information

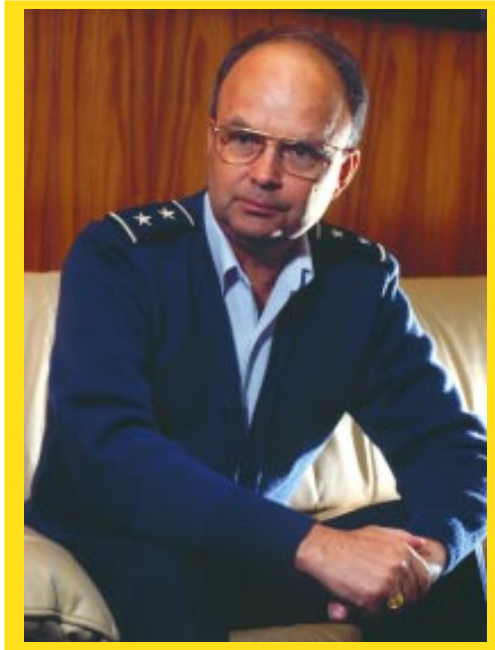


Photo by Boyd Belcher

needs, requirements, and issues originate. Embedding takes deliberate steps to enhance our combat relationship as a full participant in warfighting.

In redefining who we are, we have made some significant changes to the ideas of "intelligence" and "operators." Intelligence used to be rather narrowly viewed as threat briefings and aircraft recognition, "beeps and squeaks," and imagery interpretation, all shrouded in a veil of secrecy. Now, intelligence is less about secrets and more about the timely and accurate transfer of information, as well as the discovery that in many contingencies *information* itself can be the decisive force. The Air Force has embraced the concept that information itself is not only an enabler of operations, but also is a domain within which military operations take place, and therefore has added many dynamic features to what we once thought of as "intelligence."

The move to "information operators" may have been generated by this agency, but it is taking root throughout the Air Force hierarchy. We are in the midst of redefining who operators are; we've expanded the definition to include those who understand the doctrine and employment of air and space power. In June, Secretary of the Air Force Sheila Widnall spoke at the Air Force Intelligence Awards Banquet and had this to say:

*"This [Bosnia] is an information operation. The people executing it are information operators — not intel people, not photo interpreters — they are operators. So I view this operation as a huge milestone along our path to the future. It's a future in which our ability to gain, exploit, attack, and defend information is central to everything we do ... Your role is not to support the warfighters — you are the warfighters, integral members of the operational team."*

These all represent milestone events. We have moved ourselves and the Air Force into a very exciting time of change and discovery, of new strategies and tactics and ways of envisioning the battlespace. I consider myself exceedingly fortunate to have been with you at this time in our journey into the future. You should know that I've been very pleased and proud to be your commander, and I hope to get to see you and work with you on other endeavors, as you are distinctly the best and the brightest! Jeanine and I wish you all God speed and good luck.

*Michael V. Hayden*



# Technology and Intelligence:

## The Narrowing Gap

### The Impetus for Intelligence

Intrigue, espionage, coded correspondence, meetings behind closed doors, and clandestine operations described much of the European political scene during the Renaissance. These activities also took center stage occasionally in the 17th and 18th centuries.

Accounts of these fascinated Americans. Most Americans, busy carving their futures out of the vast North American wilderness in the 17th and 18th centuries, found little time, however, to practice these arts at home. Generally, Americans felt such activities belonged in distant Europe.

The practitioners of this so-called "Black Art" included several of the most notable people in Europe. Nicolo Machiavelli wrote *The Prince* to instruct young Cesare Borgia in the art of subversion and the uses of intelligence. Sir Francis Walsingham, Secretary of State for Queen Elizabeth I, devised the first permanent peacetime intelligence apparatus.

Both numbered among those who used intelligence to achieve national objectives in early modern Europe. Cardinal Richlieu became perhaps the most sophisticated user of intelligence,

wielding nearly complete power in France in the early 17th century.

The presence of the Atlantic Ocean minimized European influences upon many of the colonies in America. American intelligence developed early in the nation's history out of the necessities of war. It often gravitated to new developments in technology.

### The First Uses of Intelligence in America

Few people think of George Washington, the father of his country, as one who employed spies. Yet, during the Revolutionary War he directed a large spy network.

Some records indicated he may have employed as many as several hundred agents. They used cryptology or secret writing to communicate with him when he was the commander of the Continental Army. Washington personally supervised many of them.

His records show a payment of \$333.33 to an agent not ever identified to go into Boston and establish a means of secret correspondence. The agent received instructions to forward news of troop movements and other activities.

Washington's agents wrote secret messages between the lines of personal letters using invisible ink (lemon juice) and other substances. Hollowed out shoe buckles, shoes or boots, snuff boxes and the folds of clothing became convenient hiding places for sensitive information.

Alexander Hamilton, Washington's secretary for a time, worked extensively with secret inks, codes and geometric designs to conceal valuable information from British detection.

During the siege at Yorktown, Washington received news about British troop positions from Boston school teacher James Lovell, the father of American cryptanalysis. Lovell's news, once deciphered, proved useful in leading to the victory that followed.



*Confederate Cipher Disk*



# Technology & Intelligence

As the first president of the United States, Washington continued to support intelligence operations. Long after his death, information surfaced that Washington made more extensive use of intelligence than any other American president prior to the 20th century.

The end of the American Revolution brought an end as well to the activities associated with intelligence. The interest Thomas Jefferson, Benjamin Franklin and others had in cryptography largely disappeared as America, now a new republic, concentrated its attentions on other issues.

In the early 1840s, Edgar Allen Poe, known as the author of often bizarre and macabre poetry, surfaced as a master cryptographer. In his work, "The Gold Bug," he rekindled popular interest in the art of cryptanalysis. The story focused on a mystery that developed around a secret message.

Like many of his readers, secret codes and secret writing fascinated Poe. This avocation came to life in "The Gold Bug."

Poe's interests and writings popularized cryptanalysis across America. What would bring together intelligence on the one hand and secret codes and secret writing on the other?

## Balloons and the Telegraph

The Civil War represented the first major event in America that encouraged openly the marriage of intelligence with new technology.

Balloons, used in Europe as early as 1794 for reconnaissance, had not been popular in the United States. Nevertheless, they captured the interests of several who publicized their potential. By 1861, leading aeronauts suggested the Union Army should consider the use of balloons.

June 18, 1861, Thaddeus S. C. Lowe, a 28-year-old self-styled professor from New Hampshire, demonstrated the military possibilities of balloons to President Lincoln.

During an ascent over the Columbia Armory near Capitol Hill in a tethered balloon, Lowe communicated with the War Department's telegraph system. Once aloft, he sent a message from a telegraph set in the balloon connected by cable to another set on the ground.

Impressed by what he witnessed, President Lincoln secured an appointment for Lowe in Gen. George McClellan's Army of the Potomac. Despite remarkable achievements, the Union Army's balloon corps disbanded in 1863, a victim of unimaginative thinking.

The telegraph emerged in 1863 as a welcome replacement to visual flag signaling and to balloons. Operators conveyed information quickly and securely.

By 1864 telegraph lines connected Washington to most Union headquarters across the country. Telegraphers sent information routinely from Washington to subordinate commanders in the field. Confederate forces used the telegraph as well but on a much more limited basis.

The telegraph, however, had a problem. Wiretapping made it highly vulnerable. Both sides used taps to send false information. In addition, an operator's touch on the key identified him as surely as his voice.

To protect the security of military

telegraphic communications, both sides developed simple cryptological systems and ciphers that used word transposition. By 1864, both Union and Confederate forces employed false telegraphic messages to misinform the enemy.

Sherman did this in March 1864, when he learned the Confederates had tapped telegraph wires near Memphis, Tenn. He sent out false orders telling one of his units to go to Savannah. This drew out the illusive Confederate Nathan Bedford Forrest who led his troops to Savannah to cut off the alleged Union force. A much stronger Union cavalry force under secret orders from Sherman nearly captured Forrest.

While the telegraph enabled intelligence activities to be carried out, it did not take long before those who used it had to contend with the possibility of discovery because of the manipulation of the technology.



M209 Decoder

## The First Photo Intelligence

Just two decades after the Civil War, a new technology married intelligence. In 1887, the Office of Naval Intelligence ordered ships to photograph foreign coastal defenses. This represented the first carefully organized example of photographic intelligence. As Matthew Brady, the famous photographer of the Civil War, had so ably demonstrated, a picture could say volumes.

By the late 1880s, photographic intelligence had become a major strategic collection effort for the U.S. Navy.

# Technology & Intelligence

## The Birth of the Radio

In 1895, an Italian physicist brought to the attention of the world a device that would revolutionize how nations carried out intelligence activities. G. M. Marconi's first transmission of radio waves went the distance of a football field.

Four years later, two British warships equipped with Marconi radios sent and received messages a distance of 89 miles. By late 1901, Marconi transmitted a radio message from Newfoundland to Cornwall, England, a distance just over 2,000 miles.

The possibilities seemed endless. Military forces could now communicate considerable distances without a physical connection. In 1910 several nations including Great Britain, Germany and Japan admitted to using radios extensively in their official communications.

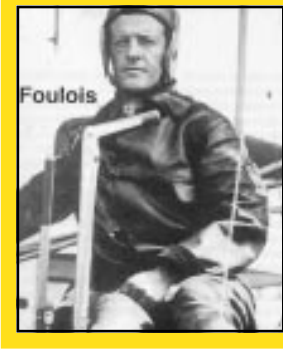
## Pancho Villa

In 1912, America made use of the radio when Ralph Van Deman designed and built the United States Army's first mobile intercept van



*Pancho Villa and his horse "Seven Leagues."*

called a radio tractor unit. Van Deman developed it primarily for use by the army while in the field.



Its first use came unexpectedly in 1916. In response to Pancho Villa's raid on Columbus, N.M., March 9, 1916, Brig. Gen. John Pershing received orders to cross the Rio Grande with 4,000 American troops and disperse Villa's band. Pershing's soldiers

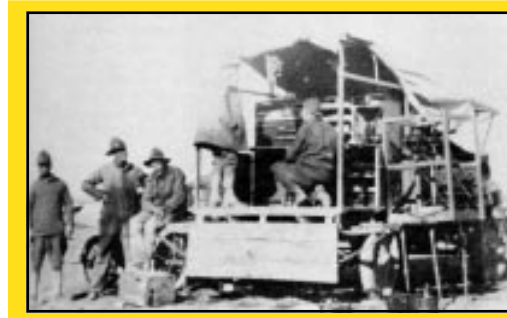
took radio tractors with them. They proved invaluable in communicating information to forward units.

Pershing also became the first American commander to employ air power in his quest for Villa. Capt. Benjamin Foulois commanded the 1st Aero Squadron. In the course of their duties the aero squadron pilots with the unit's eight Curtiss JN-3s

carried the mail, conducted observation missions, engaged in aerial photography, tracked ground troops and generally flew reconnaissance missions. Foulois and his airmen carried out these duties for the first time in a combat environment.

While Foulois's airmen did not find Villa, they demonstrated against overwhelming odds several uses of the airplane when aviation had not yet grown out of its infancy.

A relatively new and only briefly tested innovation had been used to carry out reconnaissance and operational missions as part of the Punitive Expeditionary Force.



*Radio Tractor Unit used during the Punitive Expedition.*

## American Intelligence in World War I

During World War I and the years immediately following, technology and intelligence grew as inseparable twins.

The airplane really came into its own during the war as an observation platform and an instrument of war. World War I initially confirmed its versatility and laid the foundation for its future development, often against stiff odds.

Immediately after the war, the establishment of a foreign data section at McCook Field, Ohio, brought the United States into the business of collecting information about scientific and technological developments in foreign countries.

Airplanes and related discoveries received special attention. This section would later evolve into the Foreign Technology Division and later again into National Air Intelligence Center.

Essentially, communications and electronic intelligence as we understand them today got their start in the first two decades of this century. Also during this period, American intelligence began to rely significantly upon technology.

## The Growth of American Intelligence Between Wars

The development of American intelligence between the wars focused upon the roles played by William Friedman and Herbert Yardley.

Yardley got his start in intelligence as a telegrapher at the U.S.

# Technology & Intelligence

State Department during World War I.

After the signing of the Armistice ending the war, Yardley created a cryptanalytic bureau whose job it became to decipher codes used in diplomatic correspondence by other nations.

His new organization, dubbed the American Black Chamber, set up operations in a brownstone row house near Columbia University in New York City. Yardley's group proved their worth when they succeeded in decrypting Japanese diplomatic ciphers. Armed with this news, the American Secretary of State, Charles Evans Hughes, was able to obtain terms favorable to the United States during the Washington Naval Conference of 1921.

By 1929, however, America's leadership saw little reason to continue funding for Yardley's operation. Yardley received orders to shut down and turn over his materials to William Friedman and the Signal Intelligence Service.

Angry, out of a job, and disappointed over his future prospects, Yardley wrote a book called *The American Black Chamber*.

In this book he explained in considerable detail the activities of his former unit. The United States Government forbade the publication of a second edition of the book, but its contents quickly became public knowledge. When descriptions from the book reached Japan and the other nations Yardley discussed, tensions ran high for months. They promptly changed their codes.

It would take Friedman and a team several years to break the new Japanese (Purple) Code for example. Nevertheless, it was Friedman and his associates whose work in decoding would ultimately culminate in the

formation of the National Security Agency whose specialties today include SIGINT and cryptography.

## American Intelligence in World War II

World War II represented a flowering of technological changes and refinements to innovations appearing in the 1900s. Sometimes technology moved faster than the abilities of humans to master it.

In August 1940, Army Intelligence had broken the Japanese diplomatic code. The decryption effort bore the name MAGIC.

By late November 1941, MAGIC had produced information that American installations in the Pacific might well be in danger and that war with Japan was entirely possible. On Dec. 7, 1941, MAGIC intercepted and decoded a radio message from Tokyo to the Japanese Embassy in Washington.

The message signaled a break in diplomatic relations between Japan and the U.S. While the information was available 8 hours before the first bombs fell on Pearl Harbor, there existed no national decision-making process at this time. There were no analysts to sort out quickly all the possibilities and there were no established procedures to notify those empowered to make the appropriate decisions.

Signals intelligence brought major allied successes in World War II. Admiral Chester Nimitz, significantly outnumbered by superior Japanese naval forces in the Pacific, used COMINT to confirm the Japanese intent to attack Midway.

With this prior knowledge, Nimitz positioned his forces in advance and inflicted heavy losses on the Japanese Navy. The Japanese never recuperated.

In early April 1943, U.S. Army Intelligence, through Purple, intercepted news that the commander in chief of the Japanese Imperial Navy would be visiting bases in the Bougainville area of the South Pacific.

Using COMINT derived from MAGIC, the date, place and time of arrival allowed

American forces to ambush the admiral's bomber. Admiral Isoruko Yamamoto's plane crashed, leaving no survivors.

World War II also bore witness to important improvements in technology. These made easier the job of being intelligence officers. Scientists and engineers with M-209 converters, preliminary versions of what later would become computers, processed vast amounts of data quickly.

New cameras and better film brought tremendous advances to aerial photography. Improvements in radios allowed the Allies to transmit coded instructions to the French resistance just before zero hour on D Day.

The Allied landings at Normandy and the successes that followed brought into the spotlight the utter importance of coordinated intelligence on many fronts to military operations.

Like the telegraph in the American Civil War, the radio in World War II proved invaluable. Enemy operators could intercept its messages.



RC-135 Cobra Ball



# Technology & Intelligence

On several noteworthy occasions, disastrous consequences resulted.

World War II represented a watershed in the close relationship between technology and intelligence. What would follow would be a much closer relationship between the two.

## Post World War II Intelligence Restructuring

At the end of World War II, the nation's leaders clearly understood the expanded role the U.S. would have to play in post World War II international affairs.

The debacle at Pearl Harbor became a sober reminder of the need to have a cohesive intelligence structure in place in an emerging Cold War security environment.

Had senior leadership been given sufficient warning of the impending Japanese sneak attack, they could have informed the service commanders in Hawaii to be vigilant.

The lack of central control over cryptologic operations in the immediate post war era greatly concerned senior U.S. officials. With the Soviet domination of Eastern Europe already completed, the looming specter of Communist domination over the war-torn nations of Western Europe appeared a very real possibility.

The modern American cryptologic efforts born in the years prior to World War II and perfected during the conflict clearly pointed to the need to change the manner in which intelligence activities were carried out.

In an effort to deal with the fast changing world situation, a combined intelligence board to oversee crypto-

logic issues began operations in late 1945.

Consisting of members from the State Department, Army and Navy, the board recognized that the uncoordinated and fractionalized cryptologic apparatus in place since the 1920s had to be better controlled.

On Feb. 15, 1946, after approval by the Army and Navy, a new executive organization called the Coordinator for Joint Operations was established.

The CJO's role in the nation's intelligence structure involved carrying out the routine business of coordinating central cryptologic matters.



*TR-1 Reconnaissance Aircraft*

Prior to the birth of the CJO in September 1945, the cryptologic function of the U.S. Army, the Signal Security Agency, gained status as a separate independent command called the Army Security Agency, cutting its ties to the Army Signal Corps.

In an effort to put into perspective the need to restructure intelligence within the U.S. government, it is necessary to examine the broad intelligence picture in the U.S. at the end of World War II.

President Truman's disestablishment of The Wartime Office of Strategic Studies Sept. 10, 1945, ended that intelligence organization's activities.

In its place, Truman created the Central Intelligence Group, the fore-

runner of the Central Intelligence Agency. Tasked with providing the President with a single source of information, the CIG began operations on Jan. 22, 1946.

The State Department and the military branches worked out arrangements to provide the new CIG with manpower to carry out its important mission.

## The National Security Act of 1947 and Air Force Intelligence

By early 1947, the deteriorating relationship between the United States and Soviet Union presented itself as a prominent factor in the need to restructure America's National Defense establishment.

The National Security Act of 1947 stated the intent of Congress was to provide for the authoritative coordination and unified direction of the armed forces under civilian control but not to merge them.

A separate, but equal issue within the act itself dealt with the need to create a peacetime foreign intelligence organization—the CIA. Congress had virtually no role in the creation and development of the CIG.

The CIG formally became the CIA Sept. 18, 1947 — the same day the U.S. Air Force gained its genesis. The early relationship between the new CIA and the DOD quickly became an indispensable link within the new national security establishment.

In a time before high technology intelligence tools like the U-2 or spaceborne intelligence satellites existed, early CIA intelligence estimates sometimes lacked objectivity. Indeed, in one of the more important early CIA

# Technology & Intelligence

intelligence estimates on the status of the Soviet Nuclear Weapons program, only the Air Force dissented with the CIA — accurately predicting that the Soviets would explode a nuclear device by late 1949 — four years earlier than the CIA prediction.

The CIA experienced early growing pains and in January 1951 the newly-formed office of current intelligence began publishing the all-source *Current Intelligence Bulletin*.

## The United States Air Force and the need for a Separate Intel Organization

Until September 1947, and the implementation of the National Security Act which created the Department of Defense and sanctioned the United States Air Force, SIGINT matters remained largely a service-specific operation.

The first vice chief of staff of the Air Force, Gen. Hoyt Vandenberg, endorsed the establishment of a separate Air Force cryptologic intelligence organization. Vandenberg, an astute user of cryptologic products as an air commander in World War II, recognized the imperative and clear need to have an independent air force entity to provide the same type support to the still fledgling Strategic Air Command.

U.S. Air Force Security Services' roots began to grow in mid 1948 in a transition agreement worked out between the Army Security Agency and the Air Force. The agreement provided for USAFSS to have only a mobile and tactical role for the new service's cryptologic organization. The agreement established the Air

Force Security Group June 23, 1948, to oversee the transfer of ASA resources and personnel to a new and as yet unestablished, Air Force cryptologic organization.

With the Department of Defense structure now in place, the Joint Chiefs of Staff in 1949 moved to consolidate control over the separate services' cryptologic efforts by setting up the Armed Forces Security Agency.

AFSA, announced by Secretary of Defense Louis Johnson in the spring of 1949, provided for a unified cryptologic organization intended to conduct intelligence and communications security activities within the fast growing Department of Defense establishment. AFSA sur-



*First home of the U.S. Air Force Security Service Headquarters at Arlington Hall, Va.*

vived until 1952, when the organization was redesignated as the National Security Agency. At this time, NSA assumed the responsi-

bilities as the executive agent of the U.S. Government for SIGINT information.

## The 1950s

Following the Korean conflict, in which USAFSS earned a permanent seat at the table as an Air Force intelligence organization, technology continued to drive command efforts to provide quality intelligence products.

Following the War, USAFSS quickly moved to use the best communications technology available to

provide a direct and timely response to the requirements of military commands and other organizations receiving intelligence support.

In June 1954, USAFSS implemented the point of analysis and reporting concept on a test basis at the 6901st Communications Center in Europe and the 6902nd Special Communications Center in the Pacific.

The organization also implemented the new concept of mobile operations when the first mobile unit deployed in late 1956 in response to unrest in the Middle East. During the mid-to-late 1950s, USAFSS fulfilled the intelligence needs of tactical commanders during contingencies.

The command's first modern airborne operations commenced in 1954, complementing the new mobile concept. By the end of the 1950s, USAFSS had well established airborne, ground and mobile cryptologic operations, providing support for the now firmly established U.S. Air Force.

## The 1960s

The 1960s saw USAFSS deeply involved in the Vietnam conflict. In early 1962, USAFSS deployed its first Emergency Reaction Unit to Southeast Asia. Later that year, USAFSS began providing a cryptologic capability from Thailand in support of U.S. operations in the Pacific.

Modern technology in airborne operations also had its beginnings during this time. In 1962, USAFSS crews began flying the first RC-135 missions in the Arctic region. In September 1964, with the Vietnam War



*C-130 II*



# Technology & Intelligence

now raging in the aftermath of the Gulf of Tonkin incident, USAFSS C-47 and C-130 aircraft began full fledged airborne reconnaissance operations in Southeast Asia.

In 1967, with U.S. military involvement in the Vietnam conflict growing, USAFSS took on the job as the central evaluating agency for U.S. Air Force electronic warfare activities. The new role for USAFSS marked the first major change in the command's mission since its inception two decades earlier.

Transistors now enabled large mainframe computers to make significant differences in the large intelligence picture. New technology also allowed the introduction of systems like STRAWHAT and TEBO at USAFSS ground sites, further automating many labor-intensive unit field operations.

## The 1970s

USAFSS' application of technology during the 1970s began to set the framework for the later application of all-source intelligence support to the warfighter.

Following the end of the Vietnam conflict, USAFSS, eager to support and apply its experience with technology to new missions, quickly became a main player in the EW arena.

The redesignation of the Air Force Special Communications Center as the Air Force Electronic Warfare Center July 1, 1975, moved USAFSS firmly into playing a central role in the Air Force's now rapidly expanding EW

mission. By 1978, the AFEWC's role had expanded involving new and state-of-the-art EW technologies to counter command and control systems of potential enemies. The AFEWC also realized significant strides in the analysis of defense suppression techniques for the F-4G and EF-111 aircraft.

The Department of Defense restructuring of the late 1970s initially envisaged several of the main mission functions of USAFSS being divvied up and the disestablishment of USAFSS as a major command.

The Air Force reorganization plans announced April 12, 1978, called for a new Separate Operating Agency and for the Air Force Intelligence Center to take over some of USAFSS' missions. Additionally, the AFIC would assume responsibility for the Air Force Foreign Technology Division at Wright-Patterson Air Force Base, Ohio.

The reorganization plans quickly changed as U.S. security interests shifted focus to the Persian Gulf. With USAFSS now playing an expanding EW role, the command was redesignated the Electronic Security Command Aug. 1, 1979.

This decade saw the introduction of the simple integrated circuit which would later foreshadow even more significant technological breakthroughs.

The rate at which communications-electronics technology progressed during the 1970s, essentially drove the need for the U.S. Air Force to have a dedicated SIGINT/EW organization in place as the 1980s began.

## The 1980s

ESC thrived in a decade where growing defense budgets allowed the command to take advantage of several technological breakthroughs. This enabled ESC to begin to focus its attention on furnishing vital all-source intelligence support to warfighters and theater commanders.

During the 1980s, ESC and its subordinate centers stepped forward in providing Air Force combat operators with unbroken command, control and countermeasures (C3CM) support. By the middle of the decade, the AFEWC became the primary source of EW/C3CM analysis and advice for the Air Force.

EW and C3CM support and program management activities for the Constant Web Data Base program migrated from the ESC Directorate of Operations to the AFEWC in 1988.

By this time, AFEWC personnel using microprocessor driven high-speed computers provided senior battle commanders with analytical reports

on major exercises and on EW systems effectiveness throughout the world.

ESC started its venture into the realm of space operations during this decade. In 1986, ESC began an association with the U.S. Air Force Space Command with the activation of the



6916th ESS members come together following the unit's 4,000th RC-135 mission in October 1986.



Operations building of the 6917th ESG, San Vito Dei Normanni Air Station, Italy, in 1984.

# Technology & Intelligence

Headquarters Space Electronic Security Division at Peterson Air Force Base, Colo.

During this time, ESC provided invaluable support to a number of significant military operations and contingencies including Urgent Fury, El Dorado Canyon and Just Cause.

ESC operations reaped the benefit of the capabilities of modern computer microprocessor based systems. The introduction of the Conventional Signals Upgrade and other systems profoundly changed the mechanics of ESC's intelligence operations. Clearly, the 1980s portended the arrival of the information age.

In the area of global security, matters changed faster and more profoundly than technology. Perestroika, alive and well in the Soviet Union, provided the impetus for the Soviet people to question openly their system of government as Communism began to wane at the end of the decade.

The fall of the Berlin Wall in November 1989 saw many of the Soviet Satellite states of Eastern Europe quickly wilt.

## The 1990s

As 1990 began, ESC stood poised to make an unprecedented contribution affecting the future of both the command and the U.S. military.

ESC units served at the forefront during operations Desert Shield and Desert Storm. Personnel from several command organizations played key roles in helping to orchestrate the concept of Information Dominance during the Persian Gulf conflict.

ESC helped to provide all-source intelligence to warfighters in Desert Storm with high tech microprocessor-based systems like the Tactical Infor-

mation Broadcast Service and Constant Source. Iraq's command and control system, annihilated by airpower several weeks before the start of the ground war, became a prime example of how Information Dominance was used in warfare.

For the first time during a conflict, as retired Chairman of Joint Chiefs of Staff Gen. Colin Powell aptly stated: "Personal computers were force multipliers."

As quickly as Desert Storm unfolded, ushering in the age of Information Warfare, unparalleled tremors occurred in the global security environment as the Soviet Union disintegrated in December 1991.

New security issues quickly arose as America's super power rival faded into the relative obscurity afforded to many third-world nations. The clear need to restructure Air Force intelligence encouraged the creation of a streamlined Air Force Intelligence Command to succeed ESC Oct. 1, 1991.

AFIC, moving towards becoming a truly all-source intelligence organization, was formed by merging the personnel and missions of the Air Force Foreign Technology Division and elements of the Air Intelligence Agency into a single command.

After 1991, the bi-polar security landscape of the Cold War gave way to a global economy-oriented multi-polar world.

Information technology now expanded exponentially, merging and

interrelating with all aspects of the global economy. At the same time, the U.S. Air Force also changed. It experienced an unprecedented draw-down.

The objective Air Force pointed to the need to restructure intelligence

further and the Air Force Intelligence Command found itself redesignated as a Field Operating Agency — the Air Intelligence Agency on Oct. 1, 1993.

Emphasizing increased support to the warfighter, AIA wasted no time moving to exploit the fast-developing information technologies of the 1990s.

During the course of the past few years, military forces have operated in an "infosphere," where the need for precise, instantaneous intelligence is increasing over the entire spectrum of military operations.

Now on AIA's horizon is an age where the Agency plays a key role in not only helping the U.S. Air Force achieve information superiority in the 21st century, but helping all U.S. armed forces shape the battlespace.

In today's world nearly all actions depend on some link to a facet of information technology. More often than not that link is to the microprocessor and its related hardware, software and network communication infrastructures.

Indeed, it is not an understatement to say that AIA's ability to deal with and exploit information technologies will determine its destiny in the next millennium.



Saudi Arabia

## About the Agency

# AIR INTELLIGENCE AGENCY



*Like a coat of arms, the Air Intelligence Agency's emblem lets the world know what we stand for.*

*On a blue field, a light blue globe bearing a black chess piece is displayed over a yellow key. The blue and yellow are the Air Force colors.*

*Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel.*

*The globe signifies the intelligence support the agency provides to the Air Force Global Reach — Global Power mission. The key represents the agency's efforts to unlock its protagonist's secrets. The teeth on the ward symbolize the disciplines of intelligence — SIGINT, HUMINT, IMAGERY and MASINT. The chess knight reflects counter-intelligence and the ability to use intelligence information in a variety of ways. The compass rose symbolizes intelligence operations reaching the four corners of the earth and the use of satellite information gathering.*

The Air Intelligence Agency, headquartered at Kelly Air Force Base, Texas, was activated Oct. 1, 1993.

## MISSION

An Air Force Field Operating Agency, AIA's mission is to exploit and defend the information domain. The Agency's 16,000 people worldwide deliver flexible collection, tailored air and space intelligence, weapons monitoring and information warfare products and services.

## ORGANIZATIONS AND FUNCTIONS

### National Air Intelligence Center

The National Air Intelligence Center, Wright-Patterson Air Force Base, Ohio, is the primary Department of Defense producer of foreign aerospace intelligence.



NAIC develops its products by analyzing all available data on foreign aerospace forces and weapons systems to determine performance characteristics, capabilities, vulnerabilities and intentions. Assessments are an important factor in shaping national security and defense policies.

As the Department of Defense experts on foreign aerospace system capabilities, center personnel historically have also been involved in supporting American weapons treaty negotiations and verification. The Air

Force Systems Command's Foreign Technology Division was the organizational beginning of today's National Air Intelligence Center. Since the start of its organizational lineage in 1961, the unit's mission and resources have expanded to meet the challenge of worldwide technological developments and the accompanying national need for aerospace intelligence.

In recent years, the emphasis has increasingly shifted toward evaluation of worldwide aerospace systems and the production of "tailored," customer-specific products. After name changes to Foreign Technology Center, and Foreign Aerospace Science and Technology Center, the Air Force assigned the 480th IG to it and redesigned the unit National Air Intelligence Center Oct. 1, 1993.

### Air Force Information Warfare Center

The Air Force Information Warfare Center at Kelly Air Force Base, Texas, is engaged in a myriad of activities supporting its role as the Air Force information warfare executive agent. Its mission is to develop, maintain and deploy information warfare/command and control warfare capabilities in support of operations, campaign planning, acquisition and testing.

The center acts as the time sensitive, single focal point for intelligence data and C2W services. It provides technical expertise for computer and communications security and is the Air Force's focal point for tactical deception and operations security training.

The AFIWC was activated Sept. 10, 1993, by combining the Air Force Electronic Warfare Center, and elements of the Air Force Cryptologic Support Center's securities directorate. The AFEWC provided electronic combat and technical expertise for Desert Storm C2W successes. Coupled with AFCSC's technical skills in command, control, communications and computer systems security, the merger of the two organizations provided a solid baseline for the new IW mission.

### 497th Intelligence Group

The 497th IG, Bolling Air Force Base, Washington, D.C., provides worldwide intelligence infrastructure support, physical and personal security, threat support to weapon systems acquisition and employment and automation support.





# About the Agency

The group also serves as the Washington-area focal point for Air Force intelligence planning, logistics and readiness issues, communications/computer system support and all military and civilian personnel actions and programs. The 497th also includes the Air Force Departmental Imagery Requirements office. Formerly known as the Air Force Intelligence Support Agency, the group was renamed the 497th Oct. 1, 1993.

## 544th Intelligence Group



The 544th IG, Peterson Air Force Base, Colo., directs, manages and supports units worldwide in the collection, refinement and delivery of wholesale intelligence.

Personnel operate C4I systems, providing space surveillance, threat warning and technical analysis to Air Force Space Command, United States Space Command and the North American Aerospace Defense Command.

The group acts as an interface in working infrastructure issues between collocated and associated AIA units. The 544th was activated Sept. 7, 1993, to provide a single focal point for AIA involvement in worldwide space issues and to posture AIA to better support national agencies.

## 67th Intelligence Wing



The 67th Intelligence Wing, Kelly Air Force Base, Texas, manages the agency's global mission. As the only intelligence wing in the Air Force, the 67th IW manages the planning of all-source intelligence. It assists Air Force components in the development of concepts, exercises and employment of AIA forces to support contingency, low-intensity conflict, counter-drug and special operations.

Subordinate to the wing are five intelligence groups and 35 squadrons located in the Continental United States, Hawaii and Germany. With more than 9,500 personnel assigned, the 67th IW is one of the Air Force's largest wings. The 67th IW is the only Air Force wing with people and resources permanently located around the world, providing continuous coverage to fulfill its global responsibilities. The wing was activated on Oct. 1, 1993.

## JC2WC

AIA also supports the Joint Command and Control Warfare Center, a Joint Chiefs of Staff Organization collocated with Headquarters AIA. The AIA commander is also the JC2WC director.



Headquarters Air Intelligence Agency, Kelly Air Force Base, Texas.

Photo by Jeff Marshall